



FCC PART 22H, 24E
TEST AND MEASUREMENT REPORT

For

Cellon Communications Technology (Shenzhen) Co., Ltd.

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FCC ID: T38UT2133

Report Type: Original Report	Product Type: GSM &GPRS Dual Standby Mobile Phone
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* This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk “*”

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1 GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

This measurement and test report has been compiled on behalf of *Cellon Communications Technology (Shenzhen) Co., Ltd.*, and their product model: *C2133*, *FCC ID:T38UT2133*, which is a GSM and GPRS Dual Standby Mobile Phone.

Frequency band: GSM850: 824-849 MHz (Tx); 869-894 MHz (Rx)
PCS1900: 1850-1910 MHz (Tx); 1930-1990 MHz (Rx)

1.2 EUT Photo



Additional Photos in Exhibit C

1.3 Mechanical Description

The EUT measures approximately 90 mm (L) x 45mm (W) x 19.8mm (H), and weighs approximately 72 g with battery.

** The test data gathered are from typical production sample, serial number: R0910012-3 provided by the BACL.*

1.4 Objective

This type approval report is prepared on behalf of *Cellon Communications Technology (Shenzhen) Co., Ltd.*, in accordance with Part 2, Subpart J, Part 22 Subpart H, and Part 24 Subpart E of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC rules for RF output power, modulation characteristic, occupied bandwidth, spurious emissions at antenna terminal, field strength of spurious radiation, frequency stability, band edge, and conducted and radiated margin.

1.5 Related Submittal(s)/Grant(s)

N/A

1.6 Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

Part 22 Subpart H - Cellular Radiotelephone Service
Part 24 Subpart E - PCS

Applicable Standards: TIA/EIA603-C, ANSI C63.4-2003.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

1.7 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are: spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the values ranging from ± 2.0 dB for Conducted Emissions tests and ± 4.0 dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL Corp.

Detailed instrumentation measurement uncertainties can be found in BACL Corp. report QAP-018.

1.8 Test Facility

The test site used by BACL Corp. to collect radiated and conducted emissions measurement data is located at its facility in Sunnyvale, California, USA.

The test sites at BACL have been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997, and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission, Industry Canada, and Voluntary Control Council for Interference has the reports on file and is listed under FCC registration number: 90464, IC registration number: 3062A, and VCCI Registration Number: C-2463 and R-2698. The test site has been approved by the FCC, IC, and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The current scope of accreditations can be found at <http://ts.nist.gov/ts/htdocs/210/214/scopes/2001670.htm>

2 SYSTEM TEST CONFIGURATION

2.1 Justification

The EUT was configured for testing according to TIA/EIA 603-C.

The final qualification test was performed with the EUT operating at normal mode.

2.2 EUT Exercise Software

NA

2.3 Special Accessories

N/A

2.4 Equipment Modifications

No modifications were made to the EUT

2.5 Remote Support Equipment

N/A

2.6 Local Support Equipment

Manufacturer	Description	Model No.	Serial No.
IBM	Laptop	T41	99-KHVP2

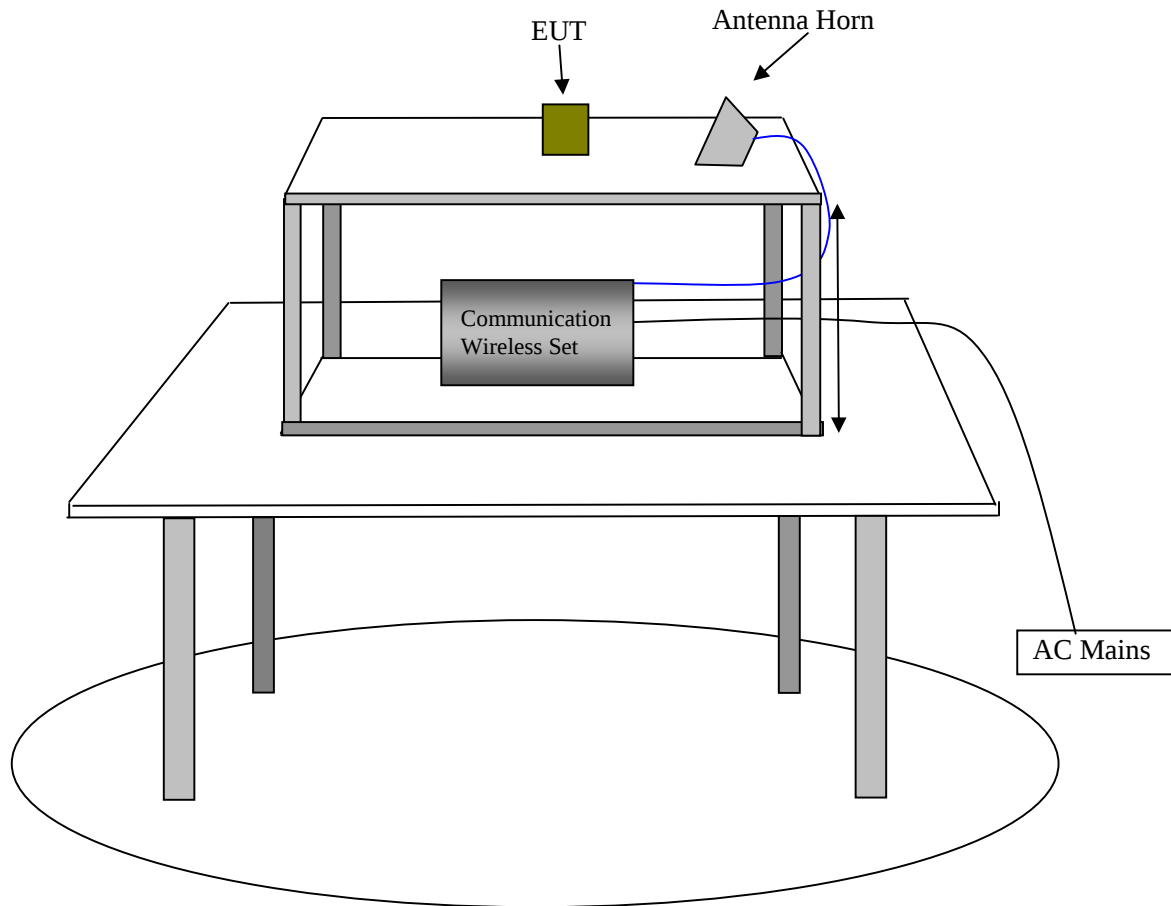
2.7 Power Supply and Line Filters

Manufacturer	Description	Model No.	Serial No.
PCD	Switching Adaptor	DSA-3RNA-05 FUS	050065

2.8 Internal Configuration

Manufacturer	Description	Model No.	Serial No.
Cellon Communication Technology Co., Ltd	Main PCB Board	C2133HW	02CU70909220046
Cellon Communication Technology Co., Ltd	LCD PCB Board	MR411903C1	-

2.9 Test setup Block Diagram for radiated emissions tests



3 SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§ 2.1047	Modulation Characteristics	N/A
§ 2.1053 § 22.917 (a); § 24.238 (a)	Field Strength of Spurious Radiation	Compliant
§2.1093	RF Exposure	Compliant *
§ 2.1046 § 22.913; § 24.232	RF Output Power	Compliant
§ 2.1049 § 22.917; § 24.238	Out of Band Emissions, Occupied Bandwidth	Compliant
§ 2.1051, § 22.917; § 24.238 (a)	Spurious Emissions at Antenna Terminals	Compliant
§ 2.1055 § 22.355; § 24.235	Frequency stability vs. temperature Frequency stability vs. voltage	Compliant
§ 22.917; §24.238	Band Edge	Compliant

**Note: Please refer to SAR report (Report Number: R09010012-SAR)*

4 FCC §2.1047 - MODULATION CHARACTERISTIC

4.1 Applicable Standard

According to FCC § 2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

5 FCC §1.1307(b) (1) & §2.1093 - RF EXPOSURE

5.1 Test Result

Compliant: The EUT is a hand portable device and thus requires SAR evaluation, please see BACL SAR Report R0910012-SAR for measurement and testing in details.

6 FCC §2.1053, §22.917 & §24.238 - RADIATED SPURIOUS EMISSIONS

6.1 Applicable Standard

Requirements: CFR 47, § 2.1053, § 22.917, § 24.238.

6.2 Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = $10 \log (\text{TX Power in Watts}/0.001)$ – the absolute level

Spurious attenuation limit in dB = $43 + 10 \log_{10} (\text{power out in Watts})$

6.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Due Date
Agilent	Spectrum Analyzer	E4440A	US45303156	2010-05-31
Agilent	Analyzer, Communications	E5155C	GB44051221	2010-04-23
Sunol Sciences	Antenna	JB1	A020106-1	2010-04-17
A.R.A	Horn Antenna	DRG-118/A	1132	2010-07-28
A. H. Systems	Antenna, Horn, DRG	SAS-200/571	261	2010-07-01
Ducommun	Pre-Amplifier	ALN-09173030-01	99-297-01R	2010-03-04
HP	Pre-Amplifier	8447D	2944A06639	2009-12-19

* **Statement of Traceability:** **BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

6.4 Test Environmental Conditions

Temperature:	20 °C ~ 22 °C
Relative Humidity:	40 % ~ 45 %
ATM Pressure:	101.4 kPa ~ 102.1 kPa

* Testing performed by Jack Liu on 2009-10-06 to 2009-10-09

6.5 Test Results

Worst case reading as follows:

Mode: GSM Transmitting		
Margin (dB)	Frequency (MHz)	Antenna Polarization (Horizontal/Vertical)
-11.86	1673.2	Vertical

Run # 1: 30 MHz -10 GHz Cellular Band Middle Channel (836.6 MHz)

Indicated		Table Azimuth (degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Freq. (MHz)	S.A. Amp. (dBuV)		Height (cm)	Polar (H/V)	Freq. (MHz)	Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)			
1673.2	73.89	186	114	V	1673.2	-33.11	9.3	1.05	-24.86	-13	-11.86
1673.2	70.84	133	108	H	1673.2	-34.35	9.3	1.05	-26.10	-13	-13.10

Run # 2: 30 MHz -20 GHz PCS Band Middle Channel (1880 MHz)

Indicated		Table Azimuth (degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Freq. (MHz)	S.A. Amp. (dBuV)		Height (cm)	Polar (H/V)	Freq. (MHz)	Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)			
3760	66.35	167	100	V	3760	-33.99	10.6	1.8	-25.19	-13	-12.19
3760	63.98	185	168	H	3760	-35.86	10.6	1.8	-27.06	-13	-14.06

7 FCC §2.1046, §22.913(a) & §24.232 – RF OUTPUT POWER

7.1 Applicable Standard

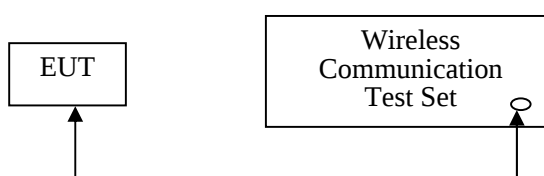
According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (a), in no case may the peak output power of a base station transmitter exceed 2 watt.

7.2 Test Procedure

Conducted:

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.



Radiated (ERP and EIRP):

TIA-603-C §2.2.17

7.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Due Date
Agilent	Spectrum Analyzer	E4440A	US45303156	2010-05-31
Agilent	Analyzer, Communications	E5155C	GB44051221	2010-04-23
Sunol Sciences	Antenna	JB1	A020106-1	2010-04-17
A.R.A	Horn Antenna	DRG-118/A	1132	2010-07-28
A. H. Systems	Antenna, Horn, DRG	SAS-200/571	261	2010-07-01
Ducommun	Pre-Amplifier	ALN-09173030-01	99-297-01R	2010-03-04
HP	Pre-Amplifier	8447D	2944A06639	2009-12-19

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

7.4 Test Environmental Conditions

Temperature:	20 °C ~ 22 °C
Relative Humidity:	40 % ~ 45 %
ATM Pressure:	101.4 kPa ~ 102.1 kPa

* Testing performed by Jack Liu on 2009-10-06 to 2009-10-09

7.5 Test Results

Conducted Power

Cellular Band Part 22H

Mode	Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (dBm)
GSM	Low	824.2	33.52	2249.0	38.45
	Middle	836.6	33.30	2138.0	38.45
	High	848.8	33.38	2177.7	38.45
GPRS	Low	824.2	33.33	2152.8	38.45
	Middle	836.6	33.03	2009.0	38.45
	High	848.8	32.99	1990.7	38.45

PCS Band Part 24E

Mode	Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (dBm)
GSM	Low	1850.2	29.56	903.6	33
	Middle	1880.0	29.10	812.8	33
	High	1909.8	28.36	685.5	33
GPRS	Low	1850.2	28.98	790.7	33
	Middle	1880.0	28.21	662.2	33
	High	1909.8	27.63	579.4	33

Radiated Power (ERP and EIRP)

Please refer to the following tables.

Cellular Band Part 22H (GSM)

Indicated		Table Azimuth (degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Freq. (MHz)	S.A. Amp. (dBuV)		Height (cm)	Polar (H/V)	Freq. (MHz)	Level (dBm)	Ant. Gain Cord. (dBi)	Cable Loss (dB)			
836.6	105.35	36	108	V	836.6	31.41	0	0.21	31.2	38.45	-7.25
848.8	103.60	36	108	V	848.8	30.60	0	0.21	30.39	38.45	-8.06
836.6	106.42	233	100	H	836.6	30.06	0	0.21	29.85	38.45	-8.60
824.2	104.94	233	100	H	824.2	29.16	0	0.21	28.95	38.45	-9.50
848.8	103.65	233	100	H	848.8	28.71	0	0.21	28.50	38.45	-9.95
824.2	102.37	36	108	V	824.2	28.32	0	0.21	28.11	38.45	-10.34

PCS Band Part 24E (GSM)

Indicated		Table Azimuth (degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Freq. (MHz)	S.A. Amp. (dBuV)		Height (cm)	Polar (H/V)	Freq. (MHz)	Level (dBm)	Ant. Gain Cord. (dBi)	Cable Loss (dB)			
1850.2	91.12	156	102	V	1850.2	18.42	9.5	0.38	27.54	33	-5.46
1850.2	89.83	208	150	H	1850.2	17.85	9.5	0.38	26.97	33	-6.03
1880.0	89.84	156	102	V	1880	18.06	9.0	0.38	26.68	33	-6.32
1880.0	87.63	208	150	H	1880	16.14	9.0	0.38	24.76	33	-8.24
1909.8	87.93	156	102	V	1909.8	17.28	9.0	0.38	25.90	33	-7.10
1909.8	85.39	208	150	H	1909.8	15.01	9.0	0.38	23.63	33	-9.37

Cellular Band Part 22H (GPRS)

Indicated		Table Azimuth (degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Freq. (MHz)	S.A. Amp. (dBuV)		Height (cm)	Polar (H/V)	Freq. (MHz)	Level (dBm)	Ant. Gain Cord. (dBi)	Cable Loss (dB)			
836.6	102.51	36	108	V	836.6	28.57	0	0.21	28.36	38.45	-10.09
848.8	100.53	36	108	V	848.8	27.53	0	0.21	27.32	38.45	-11.13
836.6	103.29	233	100	H	836.6	26.93	0	0.21	26.72	38.45	-11.73
824.2	100.67	36	108	V	824.2	26.62	0	0.21	26.41	38.45	-12.04
824.2	101.77	233	100	H	824.2	25.99	0	0.21	25.78	38.45	-12.67
848.8	100.75	233	100	H	848.8	25.81	0	0.21	25.60	38.45	-12.85

PCS Band Part 24E (GPRS)

Indicated		Table Azimuth (degree)	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Freq. (MHz)	S.A. Amp. (dBuV)		Height (cm)	Polar (H/V)	Freq. (MHz)	Level (dBm)	Ant. Gain Cord. (dBi)	Cable Loss (dB)			
1850.2	90.22	156	102	V	1850.2	17.52	9.5	0.38	26.64	33	-6.36
1850.2	88.76	208	150	H	1850.2	16.78	9.5	0.38	25.90	33	-7.10
1880.0	88.64	156	102	V	1880.0	16.86	9.0	0.38	25.48	33	-7.52
1909.8	87.04	156	102	V	1909.8	16.39	9.0	0.38	25.01	33	-7.99
1880.0	87.45	208	150	H	1880.0	15.96	9.0	0.38	24.58	33	-8.42
1909.8	85.33	208	150	H	1909.8	14.95	9.0	0.38	23.57	33	-9.43

8 FCC §2.1049, §22.917, §22.905 & §24.238 - OCCUPIED BANDWIDTH

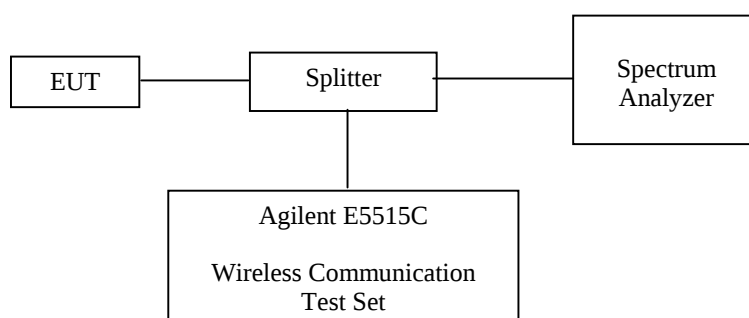
8.1 Applicable Standard

Requirements: CFR 47, Section 2.1049, Section 22.901, Section 22.917 and Section 24.238.

8.2 Test Procedure

The RF output of the transmitter was connected to the simulator, splitter and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 3 kHz (Cellular /PCS) and the -26 dB bandwidth was recorded.



8.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Due Date
Agilent	Spectrum Analyzer	E4446A	US44300386	2010-06-29
Agilent	Analyzer, Communications	E5155C	GB44051221	2010-04-23

* **Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

8.4 Test Environmental Conditions

Temperature:	20 °C ~ 22 °C
Relative Humidity:	40 % ~ 45 %
ATM Pressure:	101.4 kPa ~ 102.1 kPa

* Testing performed by Jack Liu on 2009-10-06 to 2009-10-09

8.5 Test Results

Cellular Band Part 22H

Channel	Frequency (MHz)	26 dB Occupied Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
Low	824.2	318.040	248.4586
Middle	836.6	311.992	250.4854
High	848.8	313.082	251.6839

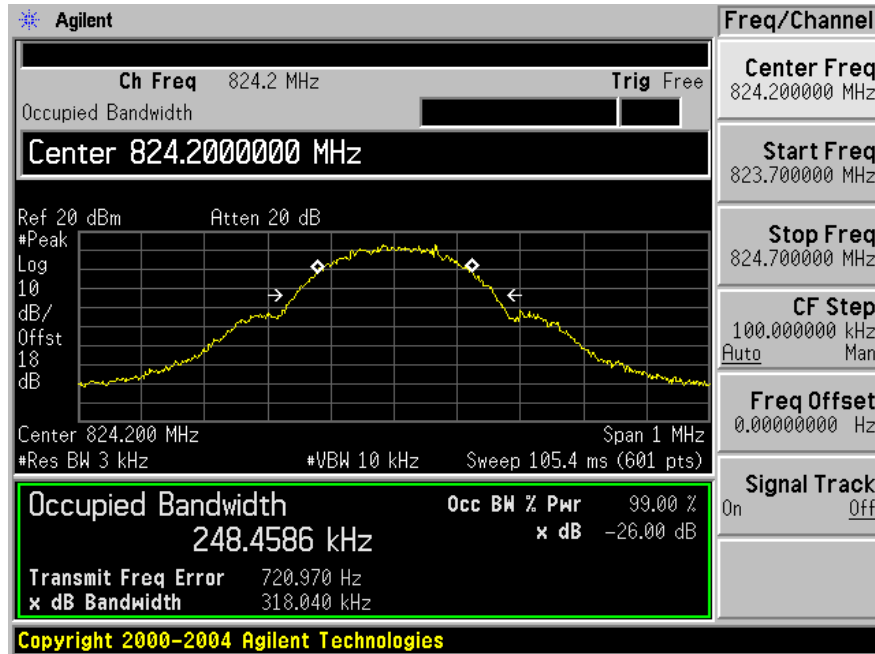
PCS Band Part 24E

Channel	Frequency (MHz)	26 dB Occupied Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
Low	1850.2	308.666	247.0094
Middle	1880.0	319.222	248.5592
High	1909.8	312.654	248.2865

8.6 Test Data & Plots

Please refer to the following plots.

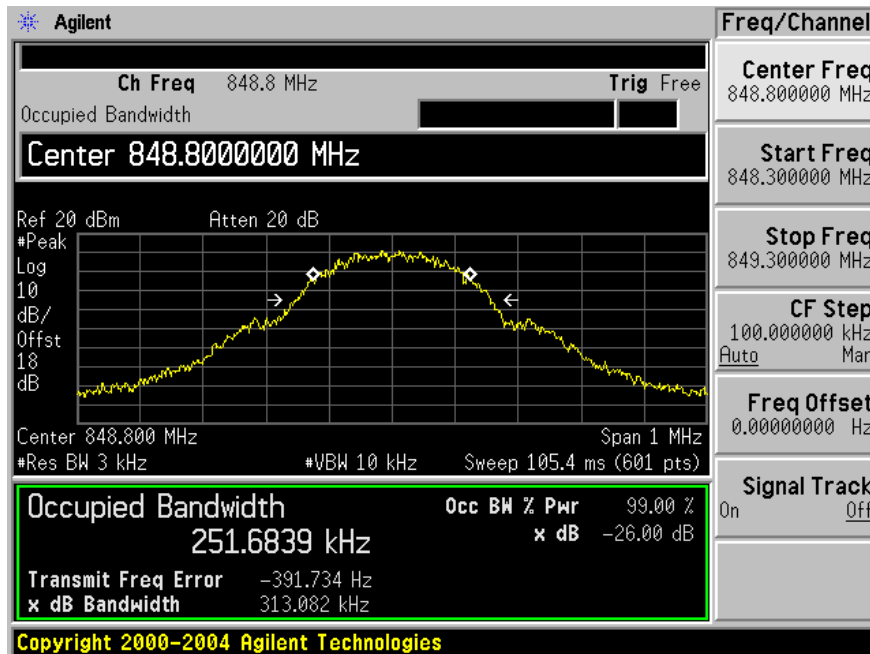
Cellular Band, Low Channel



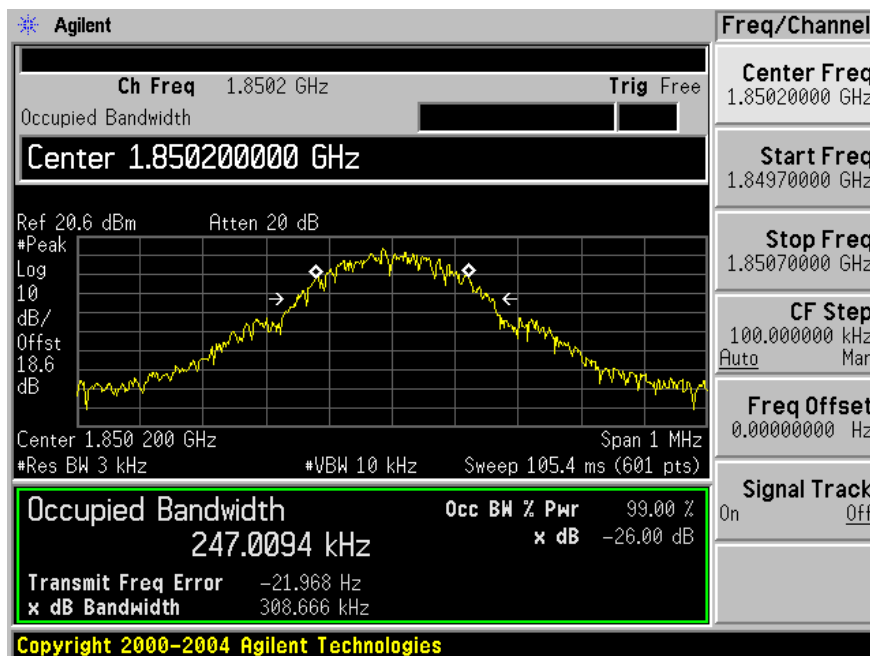
Cellular Band, Middle Channel



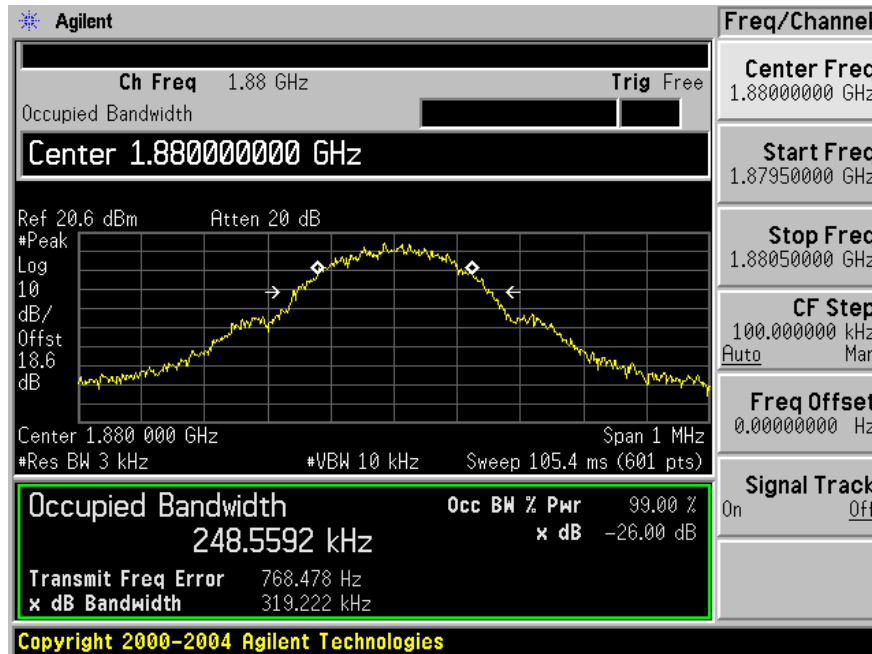
Cellular Band, High Channel



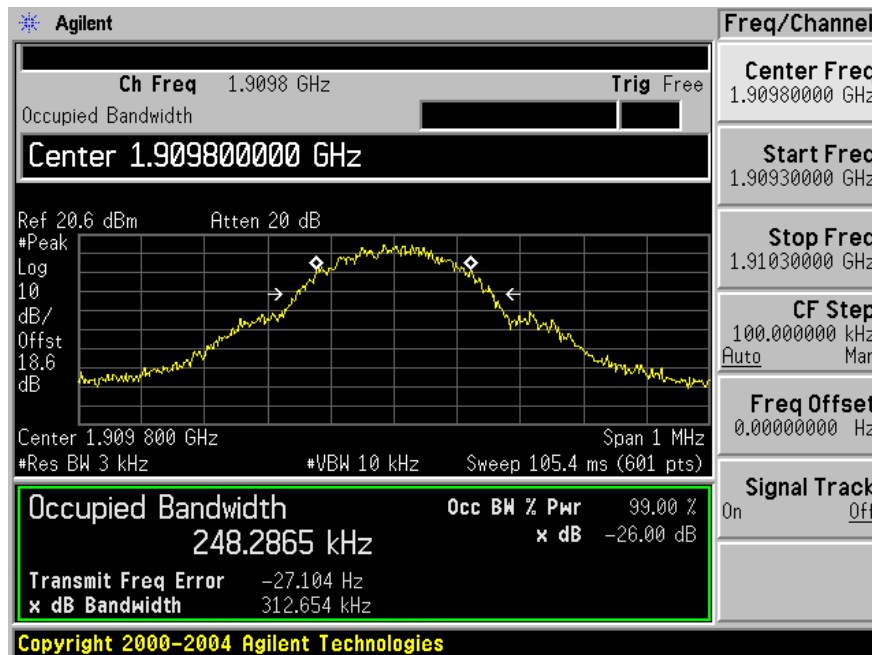
PCS Band, Low Channel



PCS Band, Middle Channel



PCS Band, High Channel



9 FCC §2.1051, §22.917 & §24.238(a) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

9.1 Applicable Standard

Requirements: CFR 47, § 2.1051. § 22.917 & §24.238(a).

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1057.

9.2 Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.

9.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Due Date
Agilent	Spectrum Analyzer	E4446A	US44300386	2010-06-29
Agilent	Analyzer, Communications	E5155C	GB44051221	2010-04-23

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

9.4 Test Environmental Conditions

Temperature:	20 °C ~ 22 °C
Relative Humidity:	40 % ~ 45 %
ATM Pressure:	101.4 kPa ~ 102.1 kPa

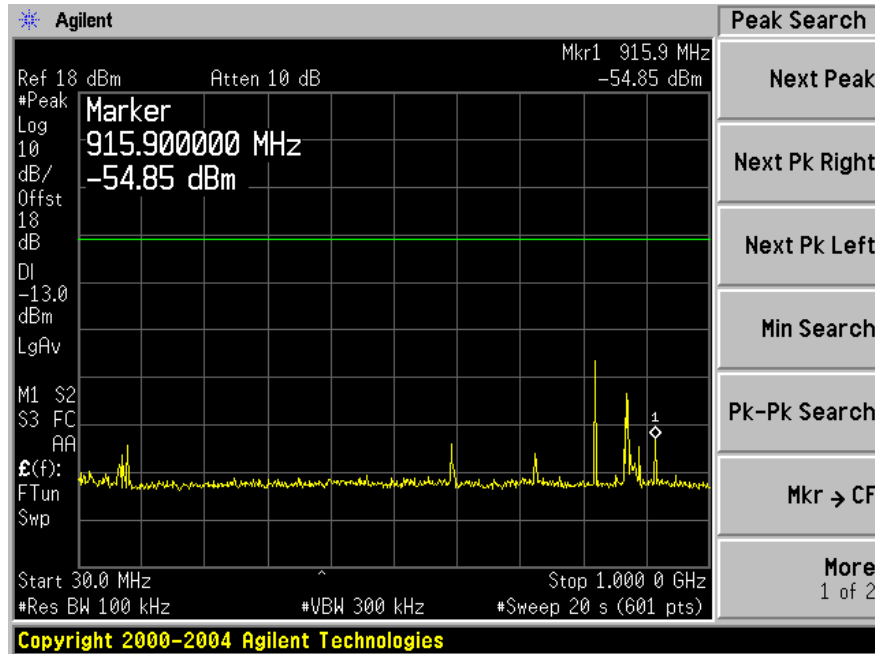
* Testing performed by Jack Liu on 2009-10-06 to 2009-10-09

9.5 Test Results

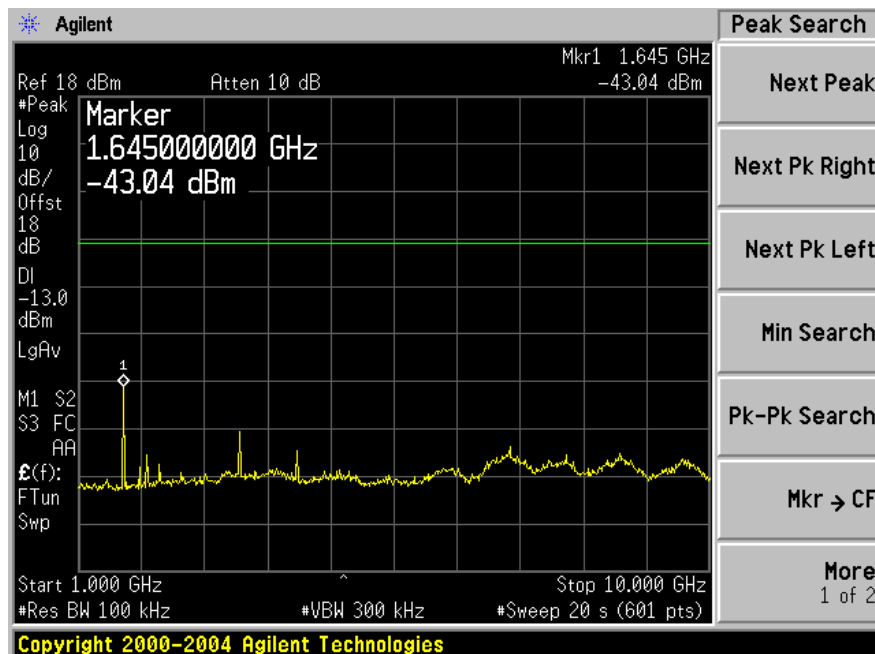
Please refer to the plots featured hereinafter:

Cellular Band, Low Channel

Plot 1a: 30 MHz – 1 GHz

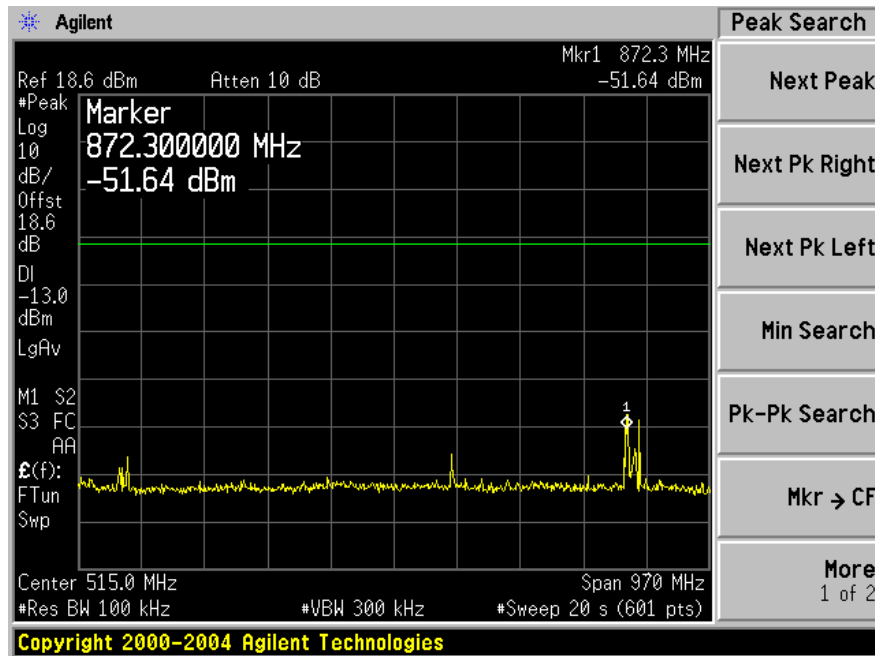


Plot 2a: 1 GHz – 10 GHz

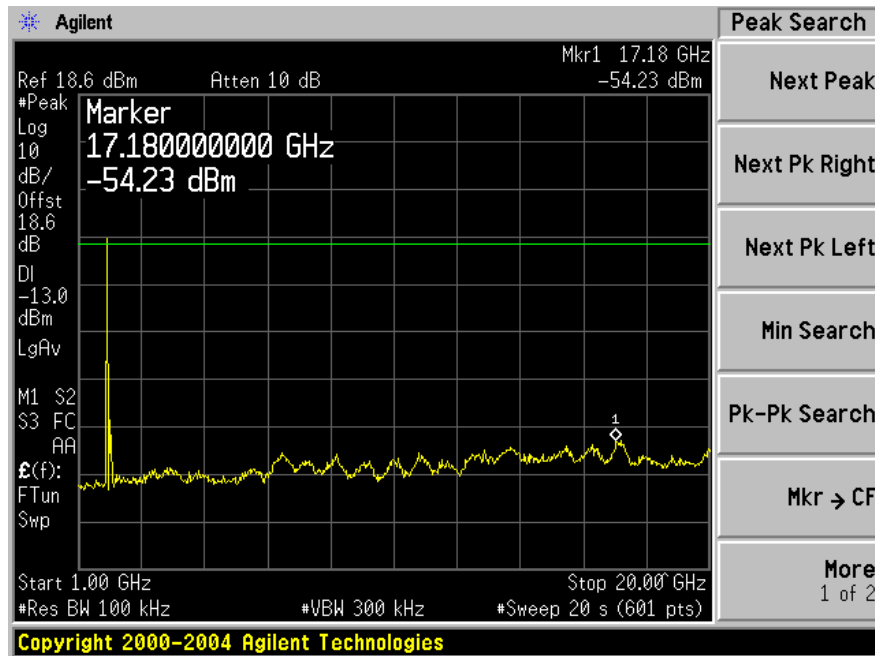


PCS Band, Low Channel

Plot 1b: 30 MHz – 1 GHz



Plot 2b: 1 GHz – 20 GHz



10 FCC §2.1055, §22.355 & §24.235 - FREQUENCY STABILITY

10.1 Applicable Standard

Requirements: FCC § 2.1055 (a), § 2.1055 (d) & following:

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C-1 of this section.

Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929	5.0	N/A	N/A
929 to 960	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

10.2 Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated, i.e., the battery end point. The output frequency was recorded for each battery voltage.

10.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Due Date
ESPEC	Temp/ Humidity chamber	ESL-4CA	018010	2009-12-12
Agilent	Spectrum Analyzer	E4446A	US44300386	2010-06-29
Agilent	Analyzer, Communications	E5155C	GB44051221	2010-04-23

* **Statement of Traceability:** **BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

10.4 Test Environmental Conditions

Temperature:	20 °C ~ 22 °C
Relative Humidity:	40 % ~ 45 %
ATM Pressure:	101.4 kPa ~ 102.1 kPa

* Testing performed by Jack Liu on 2009-10-06 to 2009-10-09

10.5 Test Results

Cellular Band (Part 22H)

1) Frequency Stability versus Temperature

Reference Frequency: 836.6 MHz, Limit: 2.5 ppm				
Test Environment		Frequency Measure with Time Elapsed		
Temperature (°C)	Power Supplied (Vdc)	Measured Frequency (Hz)	Frequency Error (Hz)	Error (ppm)
50	3.7	836599986	-14	-0.016734401
40	3.7	836599989	-11	-0.013148458
30	3.7	836600017	17	0.020320344
20	3.7	836600011	11	0.013148458
10	3.7	836599985	-15	-0.017929716
0	3.7	836600020	20	0.023906287
-10	3.7	836600027	27	0.032273488
-20	3.7	836600038	38	0.045421946
-30	3.7	836600040	40	0.047812575

2) Frequency Stability versus Voltage

Reference Frequency: 836.6 MHz, Limit: 2.5 ppm				
Test Environment		Frequency Measure with Time Elapsed		
Temperature (°C)	Power Supplied (Vdc)	Measured Frequency (Hz)	Frequency Error (Hz)	Error (ppm)
20	3.4	836600013	13	0.015539087
20	3.7	836600011	11	0.013148458

PCS Band (Part 24E)

1) Frequency Stability versus Temperature

Reference Frequency: 1880 MHz, Limit: 2.5 ppm				
Test Environment		Frequency Measure with Time Elapsed		
Temperature (°C)	Power Supplied (Vdc)	Measured Frequency (Hz)	Frequency Error (Hz)	Error (ppm)
50	3.7	1879999969	-31	-0.016489362
40	3.7	1879999972	-28	-0.014893617
30	3.7	1880000025	25	0.013297872
20	3.7	1880000028	28	0.014893617
10	3.7	1879999983	-17	-0.009042553
0	3.7	1879999979	-21	-0.011170213
-10	3.7	1879999976	-24	-0.012765957
-20	3.7	1879999970	-30	-0.015957447
-30	3.7	1879999954	-46	-0.024468085

2) Frequency Stability versus Voltage

Reference Frequency: 1880 MHz, Limit: 2.5 ppm				
Test Environment		Frequency Measure with Time Elapsed		
Temperature (°C)	Power Supplied (Vdc)	Measured Frequency (Hz)	Frequency Error (Hz)	Error (ppm)
20	3.4	1880000030	30	0.015957447
20	3.7	1880000028	28	0.014893617

11 FCC §22.917 & §24.238 – BAND EDGE

11.1 Applicable Standard

According to § 22.917, the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to §24.238, the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

11.2 Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency, RBW set to 10 kHz.

11.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Due Date
Agilent	Spectrum Analyzer	E4446A	US44300386	2010-06-29
Agilent	Analyzer, Communications	E5155C	GB44051221	2010-04-23

* **Statement of Traceability:** **BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

11.4 Test Environmental Conditions

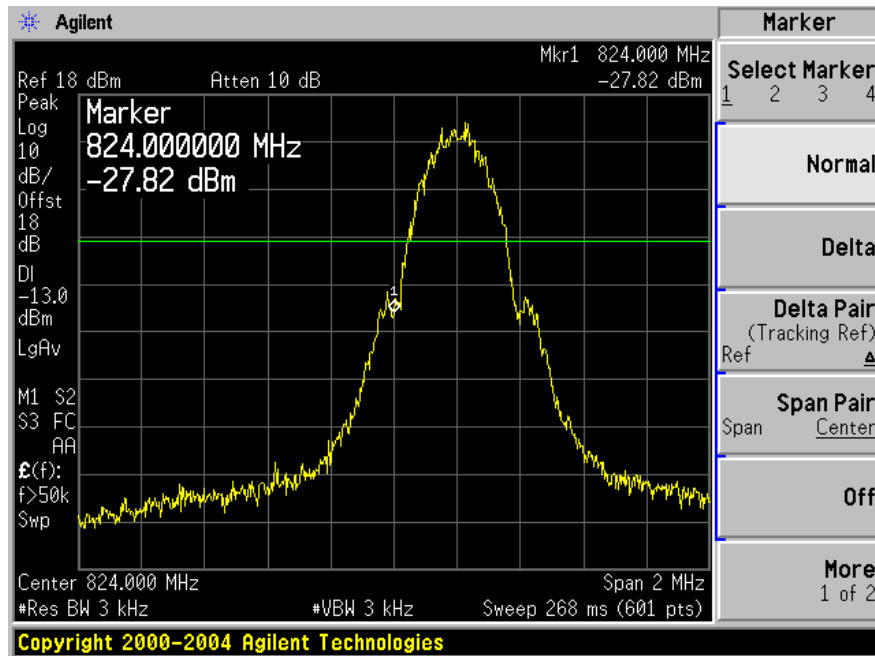
Temperature:	20 °C ~ 22 °C
Relative Humidity:	40 % ~ 45 %
ATM Pressure:	101.4 kPa ~ 102.1 kPa

* Testing performed by Jack Liu on 2009-10-06 to 2009-10-09

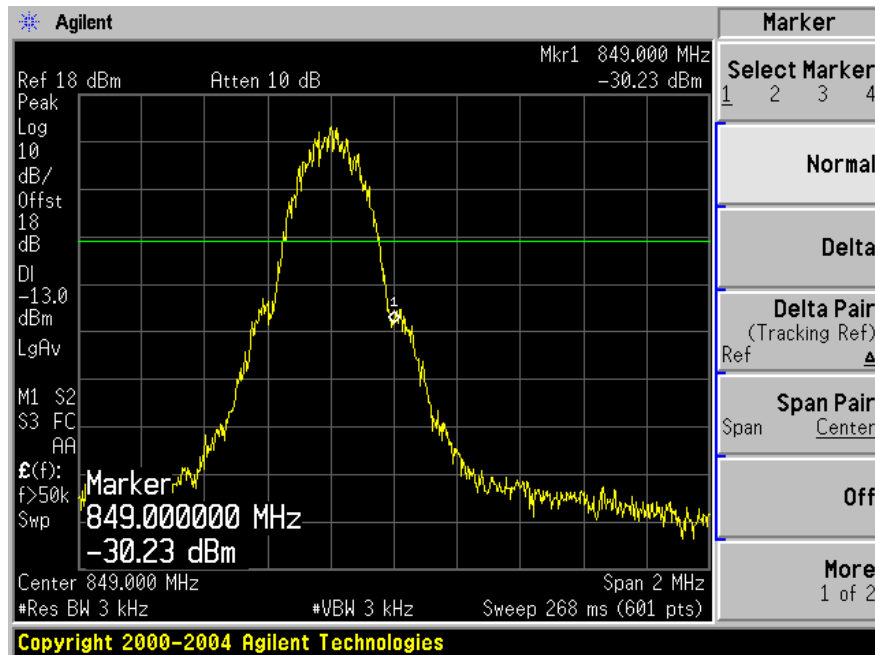
11.5 Test Results

Please refer to the following plots.

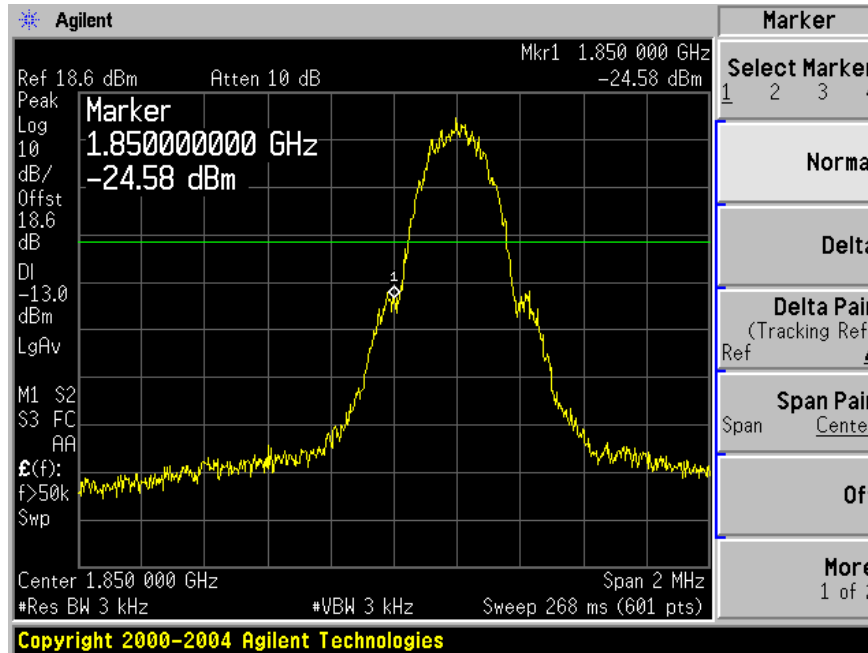
Cellular Band, Lowest Channel



Cellular Band, Highest Channel



PCS Band, Lowest Channel



PCS Band, Highest Channel

